

**SOLE**

**APPLICATION**

**FOR**

**UNITED STATES LETTERS PATENT**

***A FLAT BOTTOM BAG WITH HANDLE***

**SPECIFICATION**

To All Whom It May Concern:

Be It Known, that I **Violet Hanson**, a citizen of the United States residing at **170-40 Highland Avenue**, State of New York, has invented certain new and useful improvements in **A FLAT BOTTOM BAG WITH HANDLE** of which the following is a specification:

**RELATED APPLICATION**

5 The present application is a division of my  
originally filed application Serial No. 09/307,990, filed  
May 10, 1999, entitled PLASTIC SHOPPING BAG. Serial No.  
09/307,990 is still pending.

**BACKGROUND OF THE INVENTION**

10 The present invention relates to the construction of  
a flat bottom plastic shopping bag constructed unitarily  
with a handle and to the method for making the bag.

15 Plastic shopping bags have supplanted paper bags for  
use in supermarkets, and most retail establishments,  
because of their versatility, decorativeness and  
cheapness. Generally, such bags, have a disadvantage in  
that they are formed with hanging triangularly shaped  
bottoms and are thus difficult to fill. It has been  
attempted to provide plastic bags having flat bottoms, for  
more conveniently receiving grocery items, boxes and the  
20 like. Such bags, however, cannot be made inexpensively.  
Another problem with conventional plastic bag lies in the  
fact that they are not self supporting and therefor their

opening or mouth is neither wide or distensible enough to make loading or filling of the bag easy.

5 In my prior patents, U.S. 3,988,970, 3,916,770 and 4,230,030, I have disclosed plastic bags and their manufacture in which flat bottoms have been formed. These serve to allow the bag to be neatly folded for stacking and shipping and also to effective an advantage in filling the bag. The bags shown in these patents also have side gussets similarly designed to allow folding and stacking for shipping. The bags known from these patents, however, do not provide reinforced strong integrally and unitarily formed handles, by which the filled ba can be easily carried.

10 It is the object of the present invention to provide a plastic bag overcoming the disadvantages of the prior art bags.

15 It is a further object to provide a plastic shopping bag having an integrally formed handle allowing the user to carry a full bag with ease and comfort.

20 The foregoing objects together with other objects and advantages will be apparent from the following disclosure of the invention.

## SUMMARY OF THE INVENTION

According to the present invention, the foregoing objects and advantages are obtained by forming a plastic bag with a generally rectangular cross section having multiple gusseted side walls and a flat bottom.

The plastic bag comprises a tubular sleeve shaped to be rectangular in transverse cross section and having a pair of opposing faces and a pair of end walls. Each end wall is formed with at least a pair of longitudinal gussets. The gussets are folded inwardly and the tubular sleeve flattened by pressing the opposing faces together. In this condition the corners formed by the intersection of the lower edge and the side walls are removed, and the side walls and the bottom are further sealed and shaped to form the closed flat bottom.

The bag is finished by providing it with a unitary integral handle by cutting or scoring the bag along a line from the side walls toward but spaced from the central longitudinal axis and spaced below the topmost edge of the plastic. In use the plastic sheet is separated along the score or cut lines freeing the material in the space above the score or cut lines, thus forming a handle. Reinforcement ribs or seal members and the like can be provided to strengthen the material particularly at the juncture of the handle, score lines, etc.

Full details of the present invention are set forth in the following description and shown in the accompanying drawing.

#### BRIEF DESCRIPTION OF THE DRAWING

##### 5 IN THE DRAWINGS

Figure 1 is a perspective view of a plastic sheet rolled into a cylindrical tube;

Figure 2 is a similar view showing the cylindrical tube formed into a rectangular tubular sleeve having  
10 frontal faces, end walls and double gussets;

Figure 3 is a planar view of the tubular sleeve, illustrated in Fig. 3 showing the sleeve in flattened form and the bottom corners removed;

Figure 4 is a perspective view particularly cross  
15 sectioned showing the lower portion of the bag with its relieved lower corners being folded over the flat bottom in forming the bottom wall;

Figure 5 is a perspective view looking at the bottom wall with the relieved corners seated together forming the  
20 flat bottom;

Figure 6 is an isometric view partially broken away to show its interior and illustrating the distention and ballooning of the gussets;

a tubular sleeve 22 having a rectangular cross-sectional configuration with opposed frontal faces 24 and opposed narrower end walls 26. At the same time that the edges 20 are formed and the body squared, the end walls 26 are each  
5 folded along longitudinal gusset rib 28 to form with the longitudinal edges 20, a pair of gussets 30 having alternating longitudinal ribs and folds. Preferably, the ribs 20 are reinforced by heat to form a somewhat rigid longitudinal back, which allows the sleeve to stand when  
10 opened.

The bag is once again laid generally flat (Fig. 3) with the bottom edge 12 open and the gussets 30 running completely along the length of the bag. At this stage, with the closed gussets 30 in place, the bag is sealed at  
15 its bottom edge 12 thereby closing the tubular sleeve 22. (See Fig. 5). Simultaneously, angular inwardly directed cuts 32 are made, severing the corners 34 of the bag at the intersection of the bottom 12 and longitudinal edges 20. The severed corners 34 are removed and the adjacent  
20 tapered gusset folds 28 and the end ribs 20 are heat sealed to each other and to the bottom edge 12 insuring that the bag's integrity is reestablished (See Fig. 5).

Lastly a folder or mandrel is employed to form and flatten the bottom wall, about a horizontal line 40  
25 approximately at the point 42 where the upper edge of the cut 32 intersects the gusset ribs. Because the angular

Figure 7 is a view similar to that of Fig. 3 showing the formation of the handle for the bag; and

Figure 8 is a view similar to Fig. 6 showing the bag with handle open.

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#### DESCRIPTION OF THE INVENTION

The resultant bag of the present invention will be most easily understood by first detailing the several steps depicted in Figures 1-6 by which the bag is made.

10 In accordance with the present invention, a cylinder 10 is formed of an endless sheet of plastic film, suitable for use as a commercial shopping bag. The sheet 10 was initially laid flat and cut to the desired longitudinal size, and this flat condition, the bottom edge 12 is passed through a heating or shaping unit where several  
15 ribs and/or seal blocks 14 are formed in a uniform spaced arrangement in a relatively wide band 16 adjacent the edge 12. The ribs and seal blocks 14 strengthen the film and serve to form a reinforced bottom, as will be described.

20 The sheet 10, rolled into a cylinder, is then sealed along the longitudinal adjoining edge 18 to provide a unitary cylindrical body, open at both ends. The cylindrical body is thereafter placed into a forming or creasing machine in which a plurality of longitudinal edges 20 are formed "squaring" the cylindrical body into

cut edge of the gusset ribs and folds are sealed, the side walls 26 are pulled downwardly into the plane of the bottom the sections 42 and 44 provide triangular sections defining laterally extending wing portions 44 at the bottom wall, as seen in Figs. 5 and 6. Consequently, once the bag is opened the "foot" F of the flat bottom of the bag (Fig. 6) is larger than the rectangular cross-sectional configuration of the tubular sleeve itself, resulting in a large volume bag without substantial increase in the sleeve diameter. It will also be seen that the ribs and block seals 14 formed in the bottom edge of the tubular sleeve (Fig. 2) now create a strong reinforcement for the bottom wall and extensions creating a firm, well defined rectangular foot. The seals along cuts 32, like form reinforcing ribs strengthening the triangular extension wing portion 44.

Similarly as seen from Fig. 6, the mouth 48 or top edge of the bag is widened considerably once the bag is opened so as to allow more ready access into the bag itself. This is accomplished by the fact that when the bag is opened and the bottom wall flattened, the gusseted end walls 30 balloon outwardly and distended both transversely and laterally. Thus compared to a single gusseted bag, the present bag provides a substantially greater volume within the bag without increasing the tubular diameter or the flat dimensions of the bag. By reinforcing the longitudinal corners 28 with a heat formed



bead or seal, added provide vertical strength in provided allowing the bag to remain open without difficulty.

By forming the bag with double gussets, a wide mouth and wide body bag is formed easily and inexpensively. While two gussets are illustrated at each end it will be apparent, that more than two can be formed with little difficulty or modification. The gussets are actually smaller than would be expected and fold only a short distance inward between the frontal walls. When the bag is opened, the gussets however allow the bag to open squarely, i.e., the frontal walls and the side walls stand perpendicularly to the horizontal, even larger than the initial cross-section.

Although, multi-gussets are formed providing at least six layers of film, when laid flat, the bottom wall is not encumbered with material. This is so because the corners are cut on the bias and excess material removed. This has an added advantage, as well, when the bag is opened, the angular walls of the bottom can open wide forming in effect a part of the bag bottom; increasing the wide and flat bottom perfectly.

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The present bag is provided with self or integral handles 50 as seen in Figs. 6 and 7. In the flat condition, the gusseted tubular sleeve 22 or the finished bag is scored or cut along transverse lines 52 from each

end wall inwardly toward each other, for a selected distance terminating, spaced from the central longitudinal axis of the frontal faces. This produces a pair of spaced handles 50 integrally and unitarily formed at 54 with the frontal faces 24 of the bag. To insure that the handles 52 do not tear away from the frontal faces reinforcing ribs 56, reinforced edges or the like may be made at the corners 58 or along the longitudinal junction 54 of the handle and the bag, by heat sealing the edges adding additional material or other conventional means. The scoring or cutting as well as the reinforcement of the handles can be effected simultaneously with the formation of the flat bottom bag.

While the invention has been illustrated and described as embodied in a method of making a bag having a flat bottom and double or more side gussets, however, it is not limited to the details shown, since it will be understood that various omissions, modifications, substitutions and changes in the forms and details of the device illustrated and its operation can be made by those skilled in the art without departing in any way from the spirit of the claims attached.